

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

## PCT

### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/GB2004/002712

International filing date (day/month/year)  
23.06.2004

Priority date (day/month/year)  
25.06.2003

International Patent Classification (IPC) or both national classification and IPC  
H01S3/067

Applicant  
SOUTHAMPTON PHOTONICS LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

#### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  
Fax: +31 70 340 - 3016

Authorized Officer

Hervé, D

Telephone No. +31 70 340-4285



BEST AVAILABLE COPY

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2004/002712

**Box No. I Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**BEST AVAILABLE COPY**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2004/002712

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	6-25
	No: Claims	1-5
Inventive step (IS)	Yes: Claims	
	No: Claims	6-25
Industrial applicability (IA)	Yes: Claims	1-25
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**BEST AVAILABLE COPY**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1 The following documents are referred to in this communication:**

- D1 : US 5 864 645 A - 26 January 1999;
- D2 : US 6 157 763 A - 5 December 2000;
- D3 : US 2002/181512 A1 - 5 December 2002;
- D4 : EP 1 043 816 A2 - 11 October 2000.
- D5 : US 2002/0172486 - 21 November 2002.

**2 INDEPENDENT CLAIM 1**

**2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.**

Document D1 discloses (the references in parentheses applying to this document), see in particular fig. 2 (which represents the prior art of D1):

- an apparatus for providing optical radiation (fig. 2, col. 2 line 53 onwards), which apparatus comprises an optical fibre having core (6), a first cladding (4) and a second cladding (8), in which the first cladding has a substantially constant diameter in its cross-section (obvious as it has a circular shape).

Hence D1 discloses an apparatus comprising all the technical features of claim 1, therefore the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

**2.2 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT, with respect to the first embodiment of D1 for the following reasons:**

Document D1 discloses (the references in parentheses applying to this document):

- an apparatus for providing optical radiation (fig. 3, col. 2 line 53 onwards), which apparatus comprises an optical fibre having core (24), a first cladding (22, labelled "pump core") and a second cladding (26), in which the first cladding has a substantially constant diameter in its cross-section.

This last condition is fulfilled due to the following:

- in D1 col. 3 line 34,35 it is stated that the essentially round shape of the pump core is retained;
- the ground portion "a" (see fig. 3) has a dimension in between 1% and 49% of the pump core diameter. An example is given with  $a=1\%$  (see col. 4 line 4-6 and fig. 5).

In conclusion, It is considered that in the apparatus disclosed in D1, the first cladding has an essentially round shape and that the deviation from a round shape is 1% which implies that the diameter of the cross section of the first cladding is substantially constant.

### **3 DEPENDENT CLAIMS**

1. Dependent claims 2-5 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty (Article 33(2) PCT).

Indeed the technical features of these claims are disclosed by D1. See for instance fig. 2 which shows that the first cladding is non circular (due to the ground portion a), that it has at least one axis of mirror symmetry (the perpendicular to the ground portion a passing through the center).

2. Dependent claims 6-25 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(3) PCT).

Indeed the additional technical features of these claims are either known from D1-D5 or are merely one of several straightforward possibilities known to the an skilled in the art. For instance claims 16-21 refer to longitudinal holes within the fibre. These features are known from D5.